ITS as a Data Source for TMS
The Kentucky Case Study

1998 NATMEC
May 14, 1998
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Kentucky’s Traffic Monitoring System

- Kentucky’s TMS collects volume data, vehicle classification data, and weigh-in-motion (WIM) data.

- Data Usages:
  - Planning Studies
  - Project Development
  - Highway Information System (HIS)
  - Long Term Pavement Performance (LTPP)
  - Cost Allocation, Research, Special Needs
Traditional KYTC Data Collection Sources

● Volume data:
  – Permanent Automatic Traffic Recorders (ATRs) - 66 stations statewide
  – Portable counts - about 4700 counts made annually
    ● 10% or less made with loops
    ● Remaining counts made with roadtube

● Vehicle classification data:
  – ATRs - 30 stations statewide
Vehicle Classification (cont.)
- 350 portable counts made annually
  - Manual counts - 50% or so.
  - Machine Counts
    - ATRs
    - Portable counts made with AVCs
    - WIM data

WIM Data
- 25 Permanent Stations
- 30 Portable Stations
Kentucky’s ITS Projects

- Kentucky has nine ITS projects that are either operational or are under development.
  - Three Commercial Vehicle Operation (CVO) projects.
  - Three Advanced Traffic Management System projects (ATMS).
  - Three Advanced Rural Transportation System (ARTS) projects.
- The Cabinet is considering a system that would span all of I-75.
TMS Data Availability from ITS Projects in Kentucky

- Data types
- Data Collection Process
- Project Details
  - Advantage I-75
  - I-65 Electronic Clearance
  - Lexington Traffic Management System
  - ARTIMIS
  - Other Projects
Types of TMS Data Available

- Volume Data - available at seven projects.
- Speed Data - available at six projects.
- Lane Occupancy Data - available at six projects.
- Vehicle Classification Data - available at three projects.
- Truck Weight Data - available at two projects.
Different for each project. Don’t have an integrated process yet. Hope to have that with new TMS software.

Details of Data Collection/Processing

- Equipment Used
- Data Transmittal
- Data Formats
- Data Processing
Data Collection Process (cont.)

- Costs
  - Savings on installation (cost absorbed by ITS rather than Planning).
  - Additional expenses due to non-routine data processing.
- Problems
- Future plans
Kentucky has four stations that have WIM equipment (IRD bending plates).
Have collected data since 1995.
WIM recorder is called via modem to collect data.
Usually one week per quarter of year is collected.
Advantage I-75 (cont.)

- Problems
  - Coordination of sensor maintenance.
  - UNIX Operating System

- Future Improvements
  - Maintenance contract.
  - IRD is writing a new Windows Interface.
I-65 Electronic Clearance

- One site operating since 1991.
- IRD WIM system with piezo cable sensors.
- Data is collected via modem on seasonal basis.
- Problems:
  - lightning damage
  - sensor maintenance
- Future Improvements: will be expanded to three sites this year.
Lexington Traffic Management System

- 85 sites equipped with loop detectors.
- Data gathered by Lexington Traffic Div. & mailed on diskette.
- Data converted to card 3 format & merged with TMS.
- Problems: Labor intensive.
- Future direction: Need 170 controller reader.
Northern Kentucky Traffic Management System (ARTIMIS)

- Partially operational in 1997.
- Technologies include RTMS, loops, and video cameras.
- Available data:
  - Volume, lane occupancy, speed, vehicle classification data at 8 interstate sites.
  - Volume, lane occupancy, speed at 15 other interstate locations.
Problems:
- Huge system which requires long lead time to get going.
- Data conversion is not smooth yet.

Future plans:
- Real-time data available online.
- Data will be in FHWA formats.
Other ITS Projects

- TRIMARC in Louisville - (ATMS) expect to get volume data from 8 miles of interstate highway (I-65).
- Cumberland Gap Tunnel - (ARTS) will get volume data at one location.
- Road Weather Information System - (ARTS) will coordinate installation efforts to add ability to collect volume data.
Summary

- **Data availability**
  - Kentucky is currently getting TMS data from four ITS projects.
  - Three more ITS projects will soon have TMS data.

- **Improvements**
  - Front end: Kentucky is working with ITS staff and contractors to get the optimal data format and to improve data transmission.
Summary (cont.)

- Back end: Kentucky is hoping to purchase a new TMS software system that will process ITS data more efficiently.

- ITS has many major benefits including safety enhancements and congestion relief. ITS also will have a significant impact on the TMS by eliminating the need for traditional data collection on many highway segments.